

### **REMARKS**

The applicant respectfully requests reconsideration in view of the amendments and the following remarks. Support for amended claim 23 can be found in claim 23 and in the examples. Support for newly added claim 49 can be found in claim 23. Claims 49 is limited to "consisting of" language. Support for newly added claims 50 through 54 can be found in the abstract and in paragraph nos. [0042] and [0104]- [0109] of the published specification (US 2006/0030013). Support for newly added claims 55-58 can be found in the published specification in paragraph nos. [0043] –[0047], [0076], [0078], [0089]-[0094] and [0104] – [0109] The application contains a total of twenty-eight claims (claims 23-26, 28-30, 33-37, 39, 41-42, and 46-58). Claims 49-58 were added. The applicant has 4 independent claims (claims 23, 48, 49 and 50).

**The applicant authorized the USPTO to charge \$636.00 (\$416.00 for the extra eight claims over 20 and \$220.00 for the extra independent claim over three).**

No new matter has been added.

Claims 23-26, 28-30, 33-37, 41, 42, 46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al., U.S. Patent No. 5,288,619 (Brown). Claims 23-26, 28-30, 33-37, 39, 41, 42, 46, and 48 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Brown as applied to claims 23-26, 28-30, 33-37, 41, 42, 46, and 48 above, and further in view of Pettrone et al., U.S. Patent No. 5,240,835 (Pettrone) and Perner et al., U.S. Patent No. 5,009,805 (Perner). The applicant respectfully traverses these rejections.

### **Rejections Over Brown**

Claims 23-26, 28-30, 33-37, 41, 42, 46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown. Claims 23-26, 28-30, 33-37, 39, 41, 42, 46, and 48 remain

rejected under 35 U.S.C. 103(a) as being unpatentable over Brown as applied to claims 23-26, 28-30, 33-37, 41, 42, 46, and 48 above, and further in view of Pettrone and Perner.

In order to expedite prosecution, the applicant has limited the claims to having a specific lipase which is used in the examples. The applicant believes that Brown does not disclose the claimed lipases (originating from the specification *Candida antarctica B* or *Burkholderia sp*) in free or immobilized form.

The applicant has also added claims directed to a method of coating a substrate (see claims 52-58). The applicant does not believe that Brown discloses or teaches the applicant's claimed coating method.

The present invention aims at the preparation of such incompletely (partially) acrylated polyols which, as explained on the bottom of page 2 to the top of page 3 of the application and are of specific value in preparing dual-cure systems, i.e. polymer systems which are radiation-curable, and, in addition, thermally curable. Such systems are of particular advantage in view of the very low proportion of remaining extractable constituents. This particular advantage is further illustrated by comparative example 1 (i.e. example 4) which illustrates that by conventional methods the proportion of total extractables after radiation curing and thermal curing is much higher (33 or 47 % by weight) if compared to the content of extractables observed according to the present invention (see for example proportions of less than 5 % obtained according to examples 3a and 3b of the present invention) (see claim 47). The applicant's independent claim 23 limits the lipases to those of *Candida antarctica B* or *Burkholderia sp* in free or immobilized form.

All the examples show the unexpected results with the lipases (*Candida antarctica B* or *Burkholderia sp* in free or immobilized form) (See examples 1, 2, 3, 5, 6, 7, 8, 9 and 10). The

applicant was able to produce polymer coating having a markedly improved profile of properties (see paragraph no. [0159] of the applicant's published specification).

The applicant had previously amended claim 23 to partially open and partially closed language "consisting essentially of" which would exclude any ingredient or any step that materially effects the claimed invention. The applicant has further amended claim 23 to require that the lipase is the lipase enzyme from *Candida antarctica B* or *Burkholderia sp* in free or immobilized form.

None of said prior art documents as cited in the office action teach or suggest to prepare such incompletely (partially) acrylated polyols which may be used for preparing improved dual-cure systems as illustrated by the present invention. Brown does not relate to a process for coating a material as is required by claims 52-58.

The additional disclosure of Pettrone does not provide further guidance to a person of ordinary skill in the art. Again, Pettrone teaches away from the present invention. As can be taken from column 2, lines 50 to 52, the enzymatic conversion reaction as disclosed by Pettrone is based on the enzyme activity of a transacylases enzyme. Transacylases, however, belong to the enzyme class E.C.2.3.1 while lipases as used according to the present invention belong to the class E.C. 3.1.1.3 (see independent claim 23). Furthermore, the applicant has limited the lipases to those of *Candida antarctica B* or *Burkholderia sp* in free or immobilized form. Therefore, the teaching of Pettrone is based on the use of a biocatalyst residing on a completely different enzymatic mechanism, i.e. transfer of acyl groups rather than hydrolytic activity as required according to the present invention.

Finally, the teaching of Perner does not at all address the enzymatic preparation of incompletely acrylated polyols.<sup>1</sup> It is recognized that the Examiner has not given this limitation much weight (see page 3 of the Office Action).

The applicant have found that the applicability of such incompletely acrylated monomers in a dual-cure polymerization with the surprising observation that polymers are obtainable from these monomers which are characterized by a surprisingly low proportion of total extractables as illustrated in the experimental section of the present application. A person of ordinary skill in the art would not have expected said superior effect even upon combining the teaching of all the prior art references cited by the examiner.

As stated above, the examples show the unexpected results with the lipase limited to lipases from *Candida antarctica B* or *Burkholderia sp* in free or immobilized form. (See examples 1, 2, 3, 5, 6, 7, 8, 9 and 10). The applicant were able to produce polymer coating having a markedly improved profile of properties (see paragraph no. [0159] of the applicant's published specification) (See the applicant's claims 52-58) For the reasons, these rejections should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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<sup>1</sup> In the last response the undersigned inadvertently referred to Pettrone instead of Perner with respect to this statement.

A three month extension has been paid. **The applicant authorized the USPTO to charge \$636.00 (\$416.00 for the extra eight claims over 20 and \$220.00 for the extra independent claim over three).** Applicant believes no additional fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13111-00021-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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